IN THE CLAIMS

This listing of claims will replace all prior versions, and listing, of claims in the application.

1. (Currently Amended) A method of communication, comprising:

assigning at least one channelization code to each of a plurality of data packets available for a current transmission; and

allocating available transmission power to the channelization codes assigning portions of power available for communicating to at least a subset of the channelization codes based on a plurality of channel quality metrics, at least a subset of the channelization codes being assigned respective portions of the available power, wherein:[[; and]]

the assigning and allocating further comprise evaluating a number representing how many channelization codes are to be assigned to each of the packets and evaluating the portion of the allocated transmission power to be assigned to each data packet using an iterative procedure that iteratively determining adjusts the values for the portions of the allocated transmission power and the number of channelization codes for at least one iteration responsive to the channel quality metrics and the values for the portions of the allocated transmission power and the number of channelization codes determined during at least one prior iteration to optimize a capacity of a channel for communicating the data packets during the current transmission.

2. (Currently Amended) The method of claim 1, further comprising

determining the portions of the available power to be assigned based on the channel

quality metrics and a first optimization parameter;

determining the values of the number of channelization codes assigned to the data

packets based on the determined portions of the available power and a second

optimization parameter; and

repeating over a plurality of iterations the determining of the portions of the available

power and the determining of the values of the number of channelization codes.

3. (Currently Amended) The method of claim 1, further comprising

determining the number of channelization codes assigned to each data packet based on a

size of the data packet and one of the channel quality estimates associated with

the data packet;

determining the portions of the available power to be assigned to each of the

channelization codes based on a first optimization parameter; and

repeating over a plurality of iterations the determining of the number of channelization

codes and the determining of the portions of the available power.

4. (Original) The method of claim 3, further comprising:

terminating the repeating responsive to the assigned channelization codes in a first

iteration being the same as the assigned channelization codes in a second later

iteration; and

truncating the subset of assigned channelization codes based on a maximum number of allowable channelization codes.

5. (Previously Presented) The method of claim 1, wherein optimizing the capacity further comprises optimizing a Shannon capacity of the channel for communicating the data packets.

6. (Previously Presented) The method of claim 1, further comprising prioritizing the plurality of data packets.

7. (Original) The method of claim 6, wherein prioritizing the plurality of data packets further comprises:

identifying a plurality of quality of service classes;

assigning a predetermined amount of the available power to each of the quality of service classes; and

assigning the channelization codes and the portions of the available power based on the predetermined amounts for each quality of service classes.

8. (Original) The method of claim 6, wherein prioritizing the plurality of data packets further comprises:

identifying a plurality of quality of service classes;

assigning the channelization codes and the portions of the available power for a first class of the quality of service classes;

determining a remaining amount of the available power after the assigning for the first

class; and

assigning the channelization codes and the portions of the available power for a second

class of the quality of service classes based on the remaining amount of available

power.

9. (Original) The method of claim 6, wherein prioritizing the plurality of data packets
further comprises:

identifying a plurality of quality of service classes;

combining all data packets in the plurality of quality of service classes;

sorting the combined users based on a fairness algorithm; and

assigning the channelization codes and the portions of the available power based on the

sorting.

10. (Currently Amended) A method of communication, comprising:

providing a channel quality estimate; and

extracting a plurality of data packets encoded with a plurality of channelization codes

from a signal during a current transmission, the channelization codes and power

fractions associated with the signal being assigned for the current transmission

based on the channel quality estimate by ~~iteratively~~ determining values for the

power fractions and a number of channelization codes in the plurality of

channelization codes over a plurality of iterations to optimize a capacity of a

channel for communicating the data packets, wherein the values for the power

fractions and the number of channelization codes for a first iteration are determined based on the values for the power fractions and the number of channelization codes determined during at least one prior iteration.

11. (Original) The method of claim 10, further comprising initiating a communication link over a channel, the communication link being assigned to a quality of service class having a predetermined transmit power assignment and the power fraction is based on a portion of the predetermined transmit power.

12. (Previously Presented) The method of claim 10, wherein the channelization codes and the power fractions associated with the signal are assigned based on the channel quality estimate to optimize a Shannon capacity of the channel.

13. (Currently Amended) The method of claim [[1]] 10, wherein the channelization codes and power fractions associated with the signal are assigned by further comprising:

generating a cost function using a channel capacity equation having a first constraint, the cost function including a first optimization parameter associated with the first constraint;

determining a value for the first optimization parameter based on a first order derivative of the cost function; and

assigning at least one of the channelization codes and the portions of power available for communicating based on the first optimization parameter.

14. (Currently Amended) The method of claim 13, wherein the first constraint and first optimization parameter are associated with the power available for communicating, and ~~the method further comprises~~ the channelization codes and power fractions associated with the signal are assigned by determining the portions of the available power to be assigned based on the first optimization parameter.

15. (Currently Amended) The method of claim 14, wherein the channelization codes and power fractions associated with the signal are assigned by ~~further comprising~~:

> defining a second constraint for the channel capacity equation based on the channelization codes, the cost function including a second optimization parameter associated with the second constraint; and

> determining the values of the number of channelization codes assigned to the data packets based on the second optimization parameter.

16. (Currently Amended) A communication system, comprising:

a transmitter adapted to communicate data packets; and

an allocation unit adapted to generate values for a number of channelization codes for assigning ~~assign at least one channelization code~~ to each of a plurality of data packets available for a current transmission, generate values for assigning ~~assign~~ portions of available transmission power ~~available for communicating~~ to at least a subset of the channelization codes based on a plurality of channel quality metrics associated with the data packets, and adjusting over a plurality of iterations the ~~iteratively determine~~ values for the portions of the available transmission power

and the number of channelization codes <u>based on the channel quality estimates</u> to optimize a capacity of a channel for communicating the data packets <u>during the current transmission, wherein the values for the portions of the available transmission power and the number of channelization codes for a first iteration are determined based on the values for the portions of the available transmission power and the number of channelization codes determined during at least one prior iteration.</u>

17. (Currently Amended) The system of claim 16, wherein the allocation unit is further adapted determine portions of the available power to be assigned to at least a subset of the channelization codes based on the channel quality metrics and a first optimization parameter, determine the values of the number of channelization codes assigned to each data packets in the subset based on the determined portions of the available power and a second optimization parameter, and repeat <u>over the plurality of iterations</u> the determining of the portions of the available power and the determining of the values of the number of channelization codes.

18. (Currently Amended) The system of claim 16, wherein the allocation unit is further adapted determine the number of channelization codes assigned to each user in the subset based on a size of the data packet and the channel quality estimate associated with the data packets, determine portions of the available power to be assigned to at least a subset of the channelization codes based on a first optimization parameter, and repeat <u>over the plurality of iterations</u> the determining of the number of channelization codes and the determining of the portions of the available power.

19. (Original) The system of claim 18, wherein the allocation unit is further adapted to terminate the repeating responsive to the assigned channelization codes in a first iteration being the same as the assigned channelization codes in a second later iteration.

20. (Previously Presented) The system of claim 16, wherein the allocation unit is further adapted to determine portions of the available power to be assigned to at least a subset of the channelization codes based on channel quality metrics associated with the plurality of data packets to optimize a Shannon capacity of a channel for communicating the data packets.

21. (Original) The system of claim 16, wherein the allocation unit is further adapted to prioritize a plurality of data packets, assign at least one channelization code to at least a subset of the of the plurality of data packets and determine portions of the available power to be assigned to at least a subset of the channelization codes based on channel quality metrics associated with the plurality of data packets.

22. (Original) The system of claim 21, wherein the allocation unit is further adapted to identify a plurality of quality of service classes, assign a predetermined amount of the available power to each of the quality of service classes, and assign the channelization codes and the portions of the available power based on the predetermined amounts for each quality of service classes.

23. (Original) The system of claim 21, wherein the allocation unit is further adapted to identify a plurality of quality of service classes, assign the channelization codes and the portions of the available power for a first class of the quality of service classes, determine a remaining amount of the available power after the assigning for the first class, and assign the channelization codes and the portions of the available power for a second class of the quality of service classes based on the remaining amount of available power.

24. (Original) The system of claim 21, wherein the allocation unit is further adapted to identify a plurality of quality of service classes, combine all users in the plurality of quality of service classes, sort the combined users based on a fairness algorithm, and assign the channelization codes and the portions of the available power based on the sorting of the combined users.

25. (Previously Presented) The system of claim 16, wherein the allocation unit is further adapted to generate a cost function using a channel capacity equation having a first constraint, the cost function including a first optimization parameter associated with the first constraint, determine a value for the first optimization parameter based on a first order derivative of the cost function, and assign at least one of the number of channelization codes or the portions of power available for communicating based on the first optimization parameter.

26. (Previously Presented) The system of claim 25, wherein the first constraint and first optimization parameter are associated with the power available for communicating, and the

allocation unit is further adapted to determine the portions of the available power to be assigned

based on the first optimization parameter.

27. (Original) The system of claim 26, wherein a second constraint is defined for the

channel capacity equation based on the channelization codes, the cost function includes a second

optimization parameter associated with the second constraint, and the allocation unit is further

adapted to determine the values of the number of channelization codes assigned to the data

packets based on the second optimization parameter.

28. (Currently Amended) A system, comprising:

means for assigning ~~an allocation unit adapted to assign~~ at least one channelization code

to each of a plurality of data packets available for a current transmission;

means for allocating available transmission power to the channelization codes ~~assigning~~

~~portions of power available for communicating over a channel to at least a subset~~

~~of the channelization codes~~ based on a plurality of channel quality metrics

associated with the data packets, at least a subset of the channelization codes

being assigned respective portions of the available power, wherein:[[; and]]

the means for assigning and allocating further comprise means for evaluating a number

representing how many channelization codes are to be assigned to each of the

packets and evaluating the portion of the allocated transmission power to be

assigned to each data packet using an iterative procedure that ~~iteratively~~

~~determining~~ adjusts the values for the portions of the allocated transmission

power and the number of channelization codes for at least one iteration responsive

to the channel quality metrics and the values for the portions of the allocated transmission power and the number of channelization codes determined during at least one prior iteration to optimize a capacity of a channel for communicating the data packets during the current transmission.

29. (Currently Amended) The system of claim 21, further comprising:

means for determining a number of channelization codes assigned to each of the plurality of data packets based on a size of the data packet and a channel quality estimate associated with each data packet;

means for assigning portions of the power available to at least a subset of the channelization codes based on a first optimization parameter; and

means for repeating over the plurality of iterations iterating the determining of the number of channelization codes and the determining of the portions of the available power.